

Stone Game – IV [\(View\)](#)

Alice and Bob take turns playing a game, with Alice starting first.

Initially, there are n stones in a pile. On each player's turn, that player makes a *move* consisting of removing **any** non-zero **square number** of stones in the pile.

Also, if a player cannot make a move, he/she loses the game.

Given a positive integer n , return `true` if and only if Alice wins the game otherwise return `false`, assuming both players play optimally.

Example 1:

Input: $n = 1$

Output: `true`

Explanation: Alice can remove 1 stone winning the game because Bob doesn't have any moves.

Example 2:

Input: $n = 2$

Output: `false`

Explanation: Alice can only remove 1 stone, after that Bob removes the last one winning the game ($2 \rightarrow 1 \rightarrow 0$).

Example 3:

Input: $n = 4$

Output: `true`

Explanation: n is already a perfect square, Alice can win with one move, removing 4 stones ($4 \rightarrow 0$).

Constraints:

- $1 \leq n \leq 10^5$